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Q5 14. (Amended) An inbred maize plant, or parts thereof, wherein said inbred maize plant was developed by a cross of the maize plant of claim 2 with a second maize plant, growing a progeny seed obtained from said cross, and repeating the steps of selfing and growing each subsequent generation to obtain said inbred maize plant.

Q6 16. (Amended) The method of claim 15 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

19. (Amended) The single gene conversion maize plant of claim 18, wherein the gene is a dominant allele.

Q7 20. (Amended) The single gene conversion maize plant of claim 18, wherein the gene is a recessive allele.

21. (Amended) A maize plant, or parts thereof, having all the physiological and morphological characteristics of inbred line PH581, representative seed of said line having been deposited under ATCC accession No. PTA - 4432.

22. (Amended) The maize plant of claim 21 further comprising a genetic factor conferring male sterility.

Q8 24. (Amended) A tissue culture according to claim 23, cells or protoplasts of the tissue culture being from a tissue selected from the group consisting of leaves, pollen, embryos, roots, root tips, anthers, silks, flowers, kernels, ears, cobs, husks, and stalks.

25. (Amended) A maize plant regenerated from the tissue culture of claim 23, capable of expressing all the morphological and physiological characteristics of inbred line PH581, representative seed of which have been deposited under ATCC Accession No. PTA - 4432.

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35. (Amended) The method of claim 34 wherein plant breeding techniques are selected from the group consisting of: recurrent selection, backcrossing, pedigree breeding, restriction fragment length polymorphism enhanced selection, genetic marker enhanced selection, and transformation.

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37. (Amended) A process for producing inbred PH581, representative seed of which have been deposited under ATCC Accession No. PTA - 4432, comprising:

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- (a) planting a collection of seed comprising seed of a hybrid, one of whose parents is inbred PH581 said collection also comprising seed of said inbred;
 - (b) growing plants from said collection of seed;
 - (c) identifying said inbred PH581 plants;
 - (d) selecting said inbred PH581 plant; and
 - (e) controlling pollination in a manner which preserves the homozygosity of said inbred PH581 plant.

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40. (Amended) A method for producing a PH581-derived maize plant, comprising:

- (a) crossing inbred maize line PH581, representative seed of said line having been deposited under ATCC Accession No. PTA - 4432, with a second maize plant to yield progeny maize seed;
- (b) growing said progeny maize seed, under plant growth conditions, to yield said PH581-derived maize plant.

41. (Amended) A PH581-derived maize plant, or parts thereof, produced by the method of claim 40.

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42. (Amended) The method of claim 40, further comprising:

- (c) crossing said PH581-derived maize plant with itself to yield additional PH581-derived progeny maize seed;
- (d) growing said progeny maize seed of step (c) under plant growth conditions, to yield additional PH581-derived maize plants;
- (e) repeating the crossing and growing steps of (c) and (d) to generate further PH581-derived maize plants.